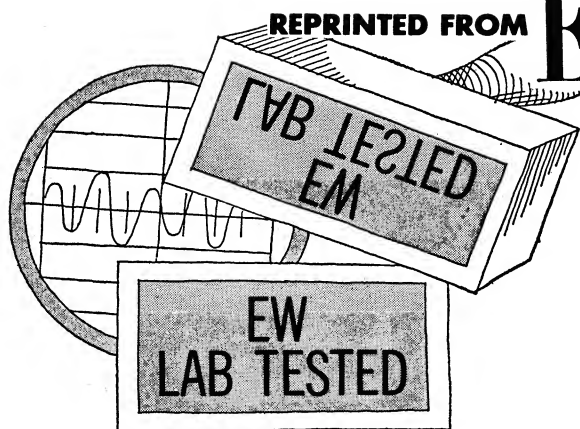




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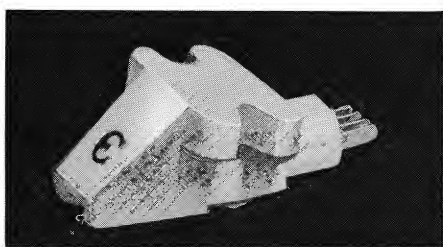
HI-FI PRODUCT REPORT

TESTED BY HIRSCH-HOUCK LABS

Euphonics "Miniconic" Cartridge

Euphonics "Miniconic" Cartridge

For copy of manufacturer's brochure, circle No. 28 on Reader Service Card.



PRACTICALLY all phono cartridges operate by either magnetic or piezoelectric generation of a voltage due to the deflection of a stylus. Other operating principles are possible, such as FM modulation of an r.f. signal or detecting groove modulation by means of a strain-gage element.

The new Euphonics "Miniconic" cartridge is a strain-gage pickup of novel construction. It contains two small semiconductor elements whose resistance varies as a function of their deflection by the stylus bar. Strain gages have been employed as phono elements in the past (before stereo), but have not proved notably successful. For one thing, conventional strain gages are not well suited, physically or electrically, to the requirements of playing a stereo record.

The "Miniconic" cartridge uses two silicon elements, each measuring only $0.008" \times 0.005"$. They are sealed in silicon dioxide for protection, and are driven from the stylus through an X-shaped yoke resembling those used on many ceramic cartridges. The elements are housed in a very light plastic case, weighing only 2 grams. A separate power-supply unit is required to operate the cartridge with conventional amplifiers.

In the small power unit, measuring $4" \times 1\frac{1}{2}" \times 2\frac{1}{2}"$, is a power supply for the elements and two transistor amplifiers. A d.c. current of about 6 ma. is passed through each silicon element, whose resistance is approximately 800 ohms. As the element is deflected by the stylus, its resistance changes slightly, producing a varying drop across its terminals. This

voltage is a.c.-coupled to a single-stage amplifier, whose output is nominally 0.4 volt from a typical record. The cartridge is mechanically equalized for the RIAA playback characteristic, which is not far from a constant-amplitude characteristic. An RC network in the output circuit converts the normal output to a velocity characteristic and attenuates it to about 8 mv. for connection to the normal magnetic input terminals of an amplifier. A switch on the power unit selects either "H(igh)" or "L(ow)" outputs.

Many arms, designed for conventional cartridges with masses of 5 to 12 grams, cannot be balanced with the 2-gram Euphonics cartridge. Weights are provided to be added to the cartridge shell if this should happen. The manufacturer also makes its own arm, whose low mass permits the maximum advantage to be obtained from the cartridge.

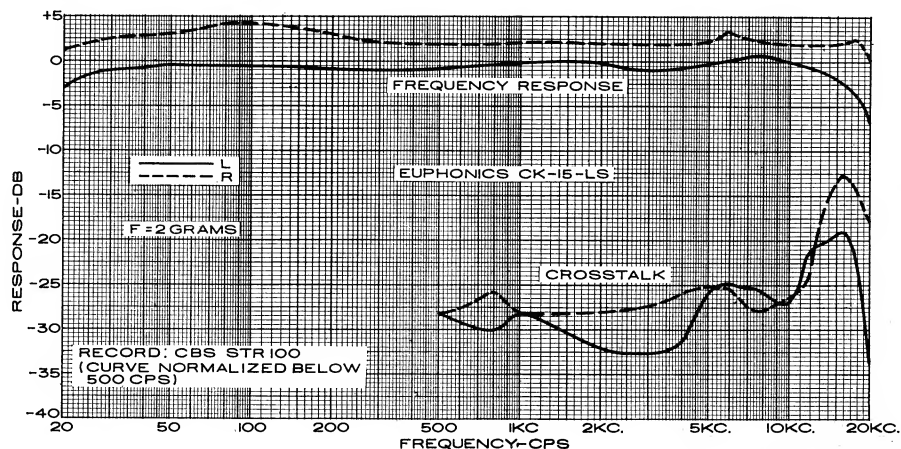
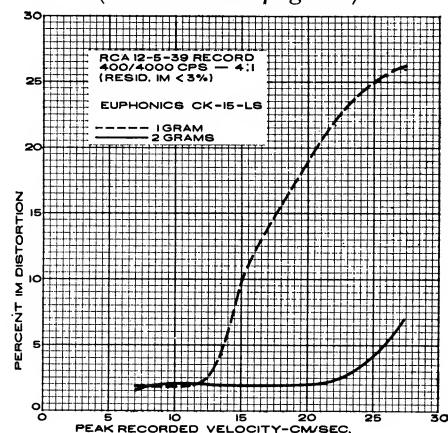
The unit we tested was the CK-15-LS (consisting of U-15-LS cartridge plus matching power source), designed for installation in conventional arms of good quality. It has a bi-radial diamond stylus, easily replaceable by the user, with a rated compliance of 25×10^{-6} cm./dyne. We measured its performance in a high-quality arm of relatively high mass.

The cartridge tracked our high-level Cook and Fairchild records at only 1-gram stylus force, matching or surpassing any other cartridge we have tested in this respect. We used a 1-gram force throughout our tests. The manufacturer

recommends a range of from $\frac{1}{4}$ to $1\frac{1}{2}$ grams.

The measured vertical stylus angle was 18 degrees. The output of the cartridge, with a recorded velocity of 3.54 cm./sec. at 1000 cps, was 13 mv. per channel on the "L" outputs and 0.38 volt per channel on the "H" outputs. If the preamplifier to which the cartridge is connected has a setting or an input for high-output magnetic cartridges, this should be used since the cartridge has about twice the output of most magnetic cartridges. In most cases, the manufacturer suggests (and we agree) that it would be preferable to use the "H" outputs connected to the "Aux." or other high-level amplifier inputs.

The cartridge is totally insensitive to magnetic hum fields, of course. Unlike
(Continued on page 22)



ceramic cartridges, it is also insensitive to electrostatic hum fields. The silicon elements have such a low impedance that in most cases even lead shielding is unnecessary. Only ground loops remain as a possible source of hum. If it is correctly installed, the "Miniconic" is perhaps the most basically hum-free cartridge on the market.

The IM distortion (measured with the RCA 12-5-39 record) was very low over the entire range of velocities likely to be encountered on a stereo record. At 1.5- to 2-grams force, it remained low to nearly the highest velocities on our test records. The frequency response was unusually flat and peak-free over the entire audio range. On one channel it was within ± 1.5 db up to 20,000 cps; on the other it dropped off slightly from 12,000 cps. We would certainly confirm the *Euphonics* claim of ± 2 db response from 20 to 20,000 cps.

Channel separation was better than

25 db up to 11,000 cps, and better than 15 db all the way to 20,000 cps. The square-wave response was one of the best we have observed on a cartridge, with only a single small overshoot on the leading edge of the 1000-cps square wave on the *CBS Labs* STR110 record.

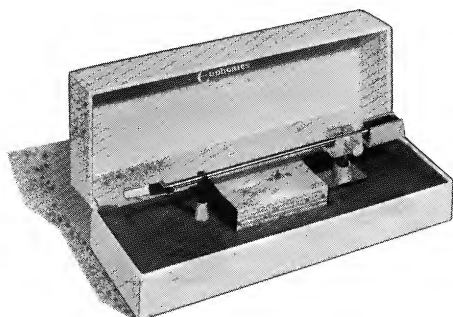
In its sound, the CK-15-LS was as good as its measurements suggest. It is clean, sweet, and uncolored. Its sound is very full, with no portions of the spectrum apparently emphasized or diminished. The total absence of hum makes it especially enjoyable at high listening levels. The "H" outputs sounded almost identical to the "L" outputs, equalized in a good-quality preamplifier. However, the low-frequency response in the "H" position seems to extend an octave or two lower than in the "L" position (where it is limited by the equalization of the pre-amplifier). As a result, subsonic rumble can cause amplifier overload and speaker cone flutter at high playing levels.

Hence, we would recommend this method of operation only with the finest auxiliary equipment, or when the *Euphonics* arm is used (giving a system cut-off of slightly below 12 cps).

The response of the cartridge actually goes to d.c., but because of the matching amplifiers the system is restricted to a lower limit of a few cycles. This is desirable to reduce the effects of record eccentricity and warpage on the output, particularly when a high-mass arm is used. With top-quality auxiliary equipment, the cartridge is capable of a fidelity of response which rivals anything we have heard.

The CK-15-LS sells for \$55. For installation in record changers or massive tonearms, the CK-15-P is available, with a 0.5-mil conical stylus of lower compliance, for \$39. The TK-15-LS system, with the CK-15-LS cartridge in the low-mass *Euphonics* arm, is \$87.50. ▲

And Here's The MINICONIC Line of Phono Systems and Conversion Kits



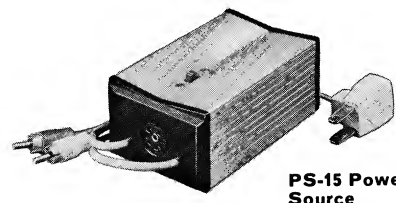
Model TK-15-LS Miniconic Laboratory Standard Phono System. Consists of U-15-LS plug-in cartridge with biradial diamond stylus. TA-15 low-mass tone arm and PS-15 power source. Works into magnetic or auxiliary inputs. With instructions. Shpg. wt., 3½ lbs. USER NET.....\$87.50

Model TK-15-P Miniconic Professional Phono System. As above, but with U-15-P plug-in cartridge with .5 mil diamond stylus. Shpg. wt., 3½ lbs. USER NET.....\$71.50



Model CK-15-LS Miniconic Laboratory Standard Phono Conversion Kit. Consists of U-15-LS cartridge (with biradial diamond stylus) for standard heads and PS-15 power source. Works into magnetic or auxiliary inputs. With instructions. Shpg. wt., 2 lbs. USER NET.....\$55.00

Model CK-15-P Miniconic Professional Phono Conversion Kit. As above, but with U-15-P cartridge with .5 mil diamond stylus. Shpg. wt., 2 lbs. USER NET.....\$39.00



PS-15 Power Source

Energy Derived From External Power Source—thus saving the delicate record grooves. The U-15 cartridge is essentially a modulating device, not a reciprocal generator. Miniature type P-15 power source (above) has all cables to plug into any high-fidelity amplifier. Includes switch to feed low-level magnetic inputs or high-level auxiliary inputs.

NOTE: For broadcast and recording studio use, 16" low-mass tone arm and/or power source with 600-ohm output also available. Write for details.

See your Hi-Fi Dealer
or Write Today for
"The Story of
Euphonics
Miniconic"

Euphonics

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October 1, 1965

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